

**NOTICE OF DETERMINATION**  
and  
Addendum to Rationale  
Including  
Record of Comments and Responses

**National Pollutant Discharge Elimination System (NPDES)  
Permit for Discharges of Process Wastewater, Cooling Water, Stormwater  
Runoff, and Contaminated Groundwater  
Y-12 National Security Complex, Oak Ridge TN  
Permit No. TN0002968**

Date: March 13, 2006

Summary

In October 1999, Department of Energy submitted an application for renewal of NPDES Permit TN0002968 for the Y-12 National Security Complex in Oak Ridge, TN. The TN Dept. of Environment and Conservation (TDEC) Division of Water Pollution Control (WPC) published a draft permit for the facility on August 8, 2005. Also, the division issued a public notice on the availability of the draft permit for public review and for a public hearing to be held in Oak Ridge. The hearing was held on Sept. 22, 2005 and followed by a comment period through October 6, 2005.

This Notice of Determination addresses comments presented at the hearing and submitted during the public notice period. It also presents TDEC's decision regarding the permit and rationale for that decision.

Comments as received are shown below with TDEC's response and permit changes, as relevant. Comments are shown in plain text with **response shown in bold text**.

Administrative Record

The permit rationale (or fact sheet) dated September 12, 2005, sets forth the Division of Water Pollution Control's (division's) basis for permit conditions to be applied for the re-issuance of the Tennessee National Pollutant Discharge Elimination System (NPDES) Permit for the facility discharges. The permit is intended to authorize point source discharges to waters of the State of Tennessee from operation of the facility.

The current permit expired on April 27, 2000. On August 8, 2005, the division issued Public Hearing Notice PH05-011, which announced a public hearing, conducted at the TDEC Division of DOE Oversight on Thursday, September 22, 2005, at 7 p.m. (EST).

On August 8, 2005, the division issued Public Notice #MMV-016, which announced its intent to issue the Permit. The draft Permit was made available in an electronic format on the division's web site at <http://www.state.tn.us/environment/wpc/wpcppo/>. The proposed NPDES permit was drafted in accordance with the provisions of the Federal Water Pollution Control Act, the Tennessee Water Quality Control Act, and other lawful standards and regulations. The division received comments through October 6, 2005. This Notice of Determination (NOD) serves as the division's response to questions, comments and issues that were raised at the hearing and/or submitted during the subsequent comment period.

#### Facility Description

The Y-12 National Security Complex is operated by BWXT Y-12, LLC for the US Dept. of Energy's National Nuclear Security Administration. The facility employs over 6,200 persons on 811 acres with over 500 buildings. Among Y-12's numerous national security missions are the fabrication for nuclear weapons as well as handling, dismantling, and stockpiling nuclear weapons from the stockpile. Y-12 also blends surplus highly enriched uranium to low enriched uranium for commercial use as feed for nuclear power plants and disposes of the remaining low enriched uranium as low-level waste.

The NPDES permit covers all point source discharges originating to surface waters within Y-12's boundary. The permit lists 58 outfalls with required monitoring and reporting.

#### Permit History

The permit being replaced expired in 2000. However, that permit is valid until it is replaced and Y-12 must operate under that permit until a new one is issued.

### **COMMENTS RECEIVED AND RESPONSES**

#### Public Hearing Comments

Radiological Compounds – commenter expressed concern regarding continued discharge of radiological compounds into Anderson County streams and ground water. Commenter contends that the State adopts ALARA as its goal, that the standard is not protective of the public or the environment, and that the State should challenge the Atomic Energy Act.

**DOE limits discharge of radiological compounds from DOE facilities under authority granted by the federal Atomic Energy Act which preempts the states from regulating the radiation hazard posed by those materials. Accordingly, the Division of Water Pollution is not authorized to prescribe limits on DOE radiological discharges under the Clean Water Act or the TN Water Quality Control Act. Our approach in the permit requires DOE to monitor and report levels of radiological compounds in Y-12 discharges to East Fork Poplar Creek. This monitoring is performed in accordance with a Radiological Monitoring Plan and the results are evaluated by radiological professionals from the divisions of DOE Oversight and Radiological Health.**

Commenter wishes to know why mercury levels in East Fork Poplar Creek have increased since 1999, what is causing this increase, and specific plans for meeting the state limit for mercury.

**Data shows mercury levels in Outfall 200 have increased in recent years. The cause of this increase is unknown but is generally believed to relate to increased release of**

**legacy mercury. Plans to meet the TN criterion of 51 parts-per-trillion depend on the cleanup of legacy sources of mercury.**

**DOE has identified in the Interim Record of Decision proposed cleanup measures to be implemented in 2009-2016. Future cleanup levels will be identified prior to implementing final measures sometime thereafter. It is noted in the permit Rationale that the interim cleanup measures are granted a waiver from meeting TN WQ standards.**

Commenter contends DOE meets compliance for concentrations of contaminants by flooding EFPC with water from the Clinch River, which sends more contamination downstream and subverts the Clean Water Act. Commenter seeks the plan and timetable for reducing and actually stopping the amount of water used to flush contaminants downstream.

Another commenter contends the Clinch River water addition allows DOE to release more contamination into the environment by reducing the concentration level of contamination. Commenter suggests possibly reducing supplemental waters over next ten years while requiring DOE to meet concentration limits.

What is the status of the review of Y12's request for reduction of flow augmentation requirements?

**The 1995 permit established the water addition "to protect stream water quality and aquatic life now in recovery". As stated in this permit Rationale, DOE has requested reduction in the existing permit condition requiring addition of Clinch River water for a base flow of 7 mgd. WPC has indicated in the Draft Permit that additional study is required before the request can be granted. Y-12 would need to study the impacts of such a reduction on aquatic life and pollutant transport. Effects on City of Oak Ridge wastewater permit conditions also need to be examined should streamflow be reduced. The timetable for the study is still under development.**

**We agree with the comment that our goal is to eliminate or reduce release of contaminants, and to restore the designated uses of EFPC. We believe the addition of Clinch River flow will aid in the recovery of the stream pending pollutant reduction/elimination. While the receiving stream segment was assessed as impaired, this additional streamflow provides a margin of safety pending improvements in effluent quality.**

Commenter requests an additional public meeting with DOE and contractor personnel to discuss issues and requests permit issuance be delayed pending the meeting.

**WPC is willing to meet with all parties as needed for further input.**

Commenter contends the permit is unclear in resolving human health risk and biohazard represented by uranium and other heavy metals.

**The permit addresses uranium and other heavy metals primarily based on chemical toxicity rather than radiation hazard. Additional information shown below addresses**

health effects from uranium ingestion as well as toxicity effects and proposed monitoring.

The Safe Drinking Water Act maximum contaminant level for uranium is 30 µg/L while the default preliminary remediation goal (PRG) (hazard quotient = 1) for ingestion of water as a residential source is 22 µg/L [Risk Assessment Information System (RAIS)]. However, drinking water criteria are not appropriate for EFPC and Bear Creek because the use classifications for these creeks do not include use as a drinking water source. The use classifications recognized by Chapter 1200-4-4 of the Division of Water Pollution Control Amendments include fish and aquatic life, recreation, livestock watering and wildlife, and irrigation.

The recreational PRG is 4,800 µg/L for incidental ingestion of contaminated water and the PRG for ingestion of fish taken from contaminated water is 81 µg/L. For use as irrigation water, the PRG is 160 µg/L for fruits and vegetables irrigated with contaminated water. In the case of livestock watering, the PRG is 4500 µg/L for milk, and 20,000 µg/L for ingestion of beef. Offsite detections have never approached the health based PRGs appropriate for the use classifications.

Issues regarding radiological compounds are addressed in the above response to comment 1. Numerical limits for uranium are not included in the Tennessee Water Quality Criteria. However, the antidegradation clause of the rule captures toxics, including uranium. In this respect, the permit requires biomonitoring of all major outfalls discharging metals, which is a significant change from the previous permit. Should toxicity be encountered in an effluent discharging to surface waters, the permit requires follow-up studies to identify the source of the toxic compounds for elimination.

Commenter expresses several concerns regarding Mercury releases:

a. Status of Big Springs Treatment system:

WPC understands the system has begun operation and is designed to treat Ground Water more than stormwater, however we have no specific details on effluent quality. We have requested DOE assistance to identify the number, location, and characteristics of discharges from this CERCLA project.

b. Concern for reduction of monitoring frequency at Outfall 502, while effluent concentration is <200 ppt versus State standard is 51 ppt:

We agreed to reduce this monitoring frequency for two reasons: (1) monitoring data shows the routine concentration is below detection level, which is 200 ppt, and (2) long-term data indicates these levels from this treatment facility remained below detection from 1997-2004. The state recreation standard is mentioned only as a point of reference in this paragraph.

EPA and State rules require that permit limits be established should there be reasonable potential for an effluent to violate water quality standards. Where data shows there is no reasonable potential, as in this case for Outfall 502, our policy is to reduce or eliminate monitoring requirements. We have agreed with the recommendations of the permittee to reduce unnecessary monitoring where possible to focus resources on better-documented problems.

c. Outfall 551 – four exceedances reported in 2001 but none since; commenter questions why:

**WPC has no further information; the effluent has met the permit limits since then.**

d. Outfall 200 – To what is attributed the increase in mercury levels since 2001?

**WPC has no data to determine the reason for this increase – see comment 2 above.**

e. Interim CERCLA measures are not expected to meet WQ criterion:

**This statement is taken out of context, and should be considered with the follow-on statement in the rationale “Measures appropriate to attaining water quality criteria will be incorporated into subsequent and final remediation decisions as ARARs.”**

f. Commenter contends that TDEC should pursue mercury reductions through the NPDES process since the CERCLA process has failed to achieve results sufficient to meet the water quality criterion.

**TDEC lacks the legal authority under the Clean Water Act delegation from EPA to undertake mercury remediation via an NPDES permit. Authority for legacy mercury cleanup is established by CERCLA and is implemented under the Federal Facilities Agreement signed by DOE, EPA, and the State of TN. This FFA establishes the CERCLA process as the method by which mercury reductions should occur; State input into the process is managed by the Div. of DOE Oversight.**

**The CERCLA process has produced a Record of Decision for Upper East Fork Poplar Creek, which selects cleanup measures consisting of paving selected areas, cleaning and replacing storm drains, and removal of UEPFC sediments including Lake Reality. The CERCLA process allows these measures to be completed without having to attain mercury standards since these are interim measures (see above comment and response).**

**Final cleanup measures have been considered but were deferred in the cleanup feasibility study. These measures included:**

- The West End Mercury Area Horizontal Well to capture contaminated groundwater flow;
- Excavation of Mercury-contaminated soil at Building 81-10 Area
- Contaminated Soil Treatment
- Large-Scale Water Treatment of flows in UEPFC or at Outfall 200.

**Final mercury cleanup must be incorporated into the DOE Environmental Management program at a level sufficient to meet State water quality standards and restore the stream uses. WPC will provide Division of DOE Oversight with technical support for water-quality-related input as future mercury cleanup actions are deliberated.**

Commenter contends that some parameters are being dropped or monitoring frequencies are being reduced such that permit limits are less strict:

**In no cases does the renewed permit require less stringent limits, since this would be considered backsliding and prohibited by Section 402 of the Clean Water Act. Any changes from the previous permit for parameters or monitoring frequencies are based on new information and/or changes in effluent characteristics as shown in the rationale for each outfall.**

The approach taken in developing permit limits involved reviewing the effluent data records from 1997 to 2004 and identifying concentrations, which were deemed significant. We defined significant to mean at least above the detection limit, then looked at the values over the time interval. If parameters were not detected, or hadn't been detected in years, that parameter was considered for deletion. EPA guidelines which allow reduction of monitoring frequencies are discussed in the Rationale Section VII.C.

WPC revised the monitoring approach from the previous permit to account for compliance attained with previous limits. We also addressed recommendations from the Y-12 Water Compliance Staff to reduce monitoring costs and focus on priority issues. Finally, we crafted stormwater, biological integrity, and toxicity monitoring provisions which supply new information not addressed in the previous permit, or addressed weakly.

The purpose for including a "Monitoring-Only" parameter in this permit is to enable DOE and WPC to gain effluent data for which there is no published effluent guideline, but which has much value in water quality decisions. We will refrain from using the terms "monitoring-only limit" because, as suggested, it is not a limit at all, but a monitoring requirement.

Commenter contends that reductions in monitoring requirements should be offset by limits on the treatment facility's wasteload or stricter requirements should flow augmentation be reduced.

The discussion at the end of Outfall 501 about toxicity testing raises a concern about toxic loading. Where in this permit is the cumulative burden borne by these waterways addressed in a regulatory way?

WPC has not established wasteload allocations in this permit. The development of a Total Maximum Daily Load for mercury will be pursued per EPA requirements to specify the maximum amount of mercury which EFPC can receive and still meet water quality standards. The TMDL will allocate mercury loadings between point and nonpoint sources. Inclusion of EFPC on Tennessee's list of impaired waters under section 303(d) of the Clean Water Act requires a TMDL be developed.

Continuous stormwater monitoring should be required with samples to be taken.

The permit proposes to define stormwater concentrations through monitoring storm events at forty (40) outfalls and at four (4) instream stations. At the instream stations samples will be collected on a basis proportional to stormwater flow with special emphasis on collecting samples nearest the stream bottom for analyses of metals such as mercury. This approach replaces an effort to collect stormwater data on flow and pH at dozens of outfalls, which yielded little knowledge of WQ conditions.

Why do charts of data for Biological Integrity for 2003/4 indicate decreasing scores?:

The specific cause (chemical or physical parameter) of the continued impairment of biological life in the stream is unknown at the present time. Proposed monitoring in the

**renewed permit addresses both effluent toxicity and instream biosurveys to establish reasons for this impairment.**

Why has the DOE Radiological Monitoring Plan not been updated in 8 years:

**Unknown – radiological professionals at the Div of DOE Oversight and Div. of Radiological Health have advised WPC the plan is adequate to define the levels of radiological compounds.**

Commenter contends the future changes in Y-12 discharges need to be considered.

**The permit conditions in Part II B. require Y-12 to identify major changes at the facility which could significantly alter the pollutants discharged. WPC expects the facility will provide data as these changes are planned.**

Is there a connection between uranium discharges from the Old Salvage Yard and Outfall 200?

**CERCLA documents indicate the salvage yard area is drained by the storm drains which eventually discharge to EFPC at Outfall 200. Information regarding potential stormwater discharges, which was submitted with the permit renewal application, indicated uranium was discharged from this area.**

Why was Outfall 201 considered too far upstream to be a representative sample location?

**Outfall 201 was located approximately 75 feet from where the major outfall 200 and Clinch River water is added. Facility personnel reported, based on visual observations and some limited conductivity studies in this area, that complete mixing of these large discharges did not likely occur until approximately 150-200 feet further downstream. This downstream location at a bridge is selected as the monitoring point for the mixing zone.**

What is the purpose of in-stream monitoring (two of the S-numbered outfalls)?

**In-stream stations are selected to document water quality in comparison with State WQ standards. The locations of the stations are chosen to reflect WQ conditions potentially affected by multiple upstream discharge sources, to document compliance, and to be cost-effective.**

Why was flow bypassed from Lake Reality?

**CERCLA documents indicated formation of increased amounts of methyl mercury was occurring in the lake, based on methyl mercury values comparing upstream and downstream readings.**

When it comes to setting effluent limits, are health and safety concerns considered secondary in favor of technology issues? . How are these factors weighted when it comes to setting limits—does one take priority over the others? What is the process for negotiating conflicts?

**As stated in Section VII.A. of the Rationale, "Overview of Procedures for Establishing Permit Limits", three factors are considered in setting permit limits – the first factor is water quality requirements to protect designated uses for those waters. This factor includes the health and safety of recreation users of the stream, such as the exposure during body contact or the consumption of fish. The second factor is technology-based limits; at some point the best professional judgment of the permit writer may be employed.**

How are industry standard effluent guidelines modified to take into account the unique characteristics of Oak Ridge operations—radioactive metals, beryllium, etc.?

**Beyond the parameters listed in the guidelines for Metal Fabrication dischargers, we used long-term data on effluent quality to establish monitoring for additional parameters.**

Too much technical jargon makes the permit not comprehensible to the lay reader.

**We attempt to make the permit as readable as possible. In dealing with some technical issues it is hard to find a simple way to explain things. We offer our time on the phone or by email to help as needed.**

What is the basis for determining limits for silver if no chronic criteria exists?

**This question relates to the discussion of how water-quality based permit limits are set, i.e., using the formulas described in the Rationale. No chronic criterion for silver has been established because we base development of WQ criteria in TN on EPA criteria, and no nationally chronic criterion is set.**

**Where limits are shown for silver in Outfalls 501 and 502 as monthly (chronic) average concentrations in mg/l or in pounds-per-day, these limits are based on EPA effluent limitation guidelines explained in Section IV of the Rationale.**

Limits were dropped at Outfall 501 because of dilution.

**Wording in the Rationale regarding Outfall 501 and potential effects on WQ addresses the average flow from Outfall 501, which is 9,000 gallons per day, being mixed with the average flow of Outfall 200, which is 2.3 million gallons per day. It would be very unlikely that constituents present in Outfall 501 could be identified in Outfall 200 with this much dilution.**

OREPA objects to the dropping of beryllium from the permit at any place.

**The Draft Permit has not included beryllium since the receiving streams are not classified as a source of drinking water. Beryllium is only listed in EPA regulations for drinking water supplies. Acute or chronic effects on aquatic life are not observed and neither EPA nor the State of TN water quality criteria include beryllium.**

Total Residual Chlorine says that Appendix 4 indicated toxic conditions in discharges released to Outfall 200—more information, please.



The discussion under the TRC heading indicates that concern for toxicity prompted inclusion in the previous permit for TRC monitoring. Appendix 4 of the Draft Permit provides data justifying more selected monitoring at major outfalls and reducing frequencies at the minor outfalls having barely detectable TRC readings.

Does Y12 not currently have an active SWPPP in place?

The existing SWPPP is currently being modified as based on permit renewal negotiations. The SWPPP will include monitoring those watersheds involving industrial activity and will include instream storm event sampling as shown in the permit.

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**US Dept. of Energy Comments on Draft Permit,**  
received Sept. 8 and October 5, 2005

*DOE COMMENT:*

Thank you for the opportunity to provide comments to the draft NPDES permit for the Y-12 National Security Complex (Y-12 Complex). Our comments are divided into general and specific comments.

**I. General Comments**  
**Legacy Contamination Issues**

As noted in the Rationale section to the draft permit, the Oak Ridge Reservation (ORR) including the Y-12 Complex is listed as a National Priorities List site under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Legacy contamination throughout the ORR is being addressed by the Department of Energy (DOE) with the Tennessee Department of Environment and Conservation (TDEC) and the U.S. Environmental Protection Agency in accordance with the Oak Ridge Reservation Federal Facilities Agreement (FFA). Consequently, water quality issues attributable to legacy contamination should be handled under the CERCLA program, which is designed to consider the requirements of other environmental statutes, including the Clean Water Act. Thus, there is no regulatory gap.

We have identified two legacy contamination issues in the draft permit: mercury and toxicity. Mercury is a legacy contaminant that is being addressed by the CERCLA process. Mercury is not associated with ongoing production or support processes at the Y-12 Complex. Thus, any actions taken to address water quality issues arising from mercury contamination should come from the CERCLA process. Toxicity may result from mercury or other legacy contaminants, and, to the extent that it arises from legacy contamination, should also be addressed in the CERCLA process.

Therefore, we request that mercury limits be removed from the NPDES permit, and if toxicity is determined to arise from legacy contaminants, that such toxicity will not result in a permit noncompliance. Otherwise, the FFA parties are essentially agreeing to one set of standards via the FFA, which may be inconsistent with those under the NPDES permit. We request that mercury be a monitor and report parameter, with the same for toxicity that is found to be related to legacy contamination, until the CERCLA remedy is complete.

We will discuss these issues in more detail under the specific comments section as well as providing further explanation as appropriate.

**RESPONSE:**

It is recognized that mercury and other legacy contaminants, including PCB's, are to be regulated by the CERCLA program. In the 1999 consent order that resolved the appeal by DOE of the permit issued in 1995, DOE and TDEC agreed that mercury limits were appropriate for inclusion in the existing permit for the treated effluent at Outfalls 55, 550 and 551.

The Consent Order does recognize that in general CERCLA is the appropriate authority for addressing legacy problems and states that any future treatment facilities built to treat legacy wastes will be addressed under CERCLA. However, the Consent Order at Page 3, Para. 4 Findings states: "Even though the mercury discharged at the three outfalls is from legacy problems, it is appropriate to continue having permit limits at these three outfalls because they are from treatment processes and the discharges have been able to meet the NPDES limits. The current effluent levels ... will be retained for the duration of the current permit but will be reevaluated in future NPDES permits because of the potential application of improved technologies developed since the issuance of the permit in 1995."

The basis for this language was that if new treatment technology became available, more restrictive limits might be applicable. No evaluations have been made showing that new treatment technologies have become available. Thus the renewed permit applies the same mercury limits as found in the Consent Order.

**DOE COMMENT:**

**Accommodation for Remediation Work**

The target date for re-issue of this permit is 2008. Should the permit expire in 2008, and re-issue of a new permit does not occur, this permit may be in effect when major remediation work under CERCLA (West End Mercury, 81-10 Soils Remediation) begins in 2009. Remediation work will be at or near permitted outfalls with limited parameters. We request language in the permit to recognize that during periods of actual remediation work conducted via CERCLA, discharges from Y-12 Complex operations will instead be monitored and regulated through the CERCLA process, and permit modification or re-issue may be needed.

**RESPONSE:**

WPC recognizes there may be times in which remediation activities have the potential to change the nature of the discharge. These activities ultimately would reduce the discharge of mercury to the stream presumably. Should a significant change in the nature of the waste stream be anticipated, we would expect DOE to notify WPC as required in the permit. WPC could potentially grant a modification of the permit based on the new conditions.

DOE contends that permitted outfalls may contain a blend of contaminants from current operations with those from future legacy remediation and, thus, should not be regulated under the CWA. When a permittee discharges a blend of current operation waste streams and legacy waste stream containing contaminants, the discharge will be regulated under the NPDES permit. To avoid this situation, segregation of waste streams containing legacy contaminants would be

preferred. Failing that, the Division of Water Pollution Control would expect DOE to ensure that increased discharge of these contaminants to NPDES outfalls during actual remediation would be prevented to the maximum extent practicable.

*DOE COMMENT:*

**II. Specific Comments**

**Part I. A. - Contains limits for mercury at Outfalls 550, 551, and 055**

Comment: The mercury associated with these outfalls is a legacy contaminant being addressed under CERCLA. Outfall 055, which emanates from Building 9201-2, has no controls in place to impact the legacy contaminate concentration which it may receive from building sumps and pipes. Any such controls should be part of the CERCLA remediation. The TDEC-approved Record of Decision (ROD) authorized a new treatment facility to address legacy contamination from the spring and sumps at Building 9201-2. The ROD should be modified if further remedial actions need to be taken to reduce mercury. If mercury limits are necessary to protect the designated uses of the receiving stream, they should be imposed via CERCLA rather than the NPDES permit. The NPDES permit should only require monitoring and reporting of mercury from these outfalls.

The Central Mercury Treatment Facility (Outfall 551) and the East End Mercury Facility (Outfall 550) are included on the Upper East Fork Poplar Creek ROD and should be monitored through the CERCLA program. The NPDES permit should only require monitoring and reporting of mercury from these outfalls.

*RESPONSE:*

**Outfalls 55, 550 and 551 were given mercury limitations in the previous permit subject to the Consent Order. Deletion of these limits in favor of a report-only requirement would be prohibited under the backsliding provision of the Clean Water Act, §402(o), because:**

- 1. There has been no "material and substantial alterations or additions to the permitted facility occurring after permit issuance which justify the application of a less stringent effluent limitation.**
- 2. No new and improved treatment technologies have become available or employed since the previous permit.**
- 3. No material changes in the situation have occurred which would justify the deletion these limits.**

**Therefore we are not authorized under the Clean Water Act or State rules to delete these limits.**

**We wish to clarify our understanding of the mercury component of the discharge at Outfall 55 as a treated effluent. This discharge is reported in the permit renewal application as the treated (filtered) bypass from the Outfall 550 system during high flows. We understand this discharge may be eliminated by the proposed Big Springs treatment system. We seek the assistance of DOE in identifying the number, location, and characteristics of discharges from that project.**

**Effluent limits for mercury at Outfalls 550, 551, and 55 are retained in the renewed permit pending development of the TMDL. (added 12/20/05 – see response to EPA comments on following pages).**

*DOE COMMENT:*

**Part I. A. – Outfall EFP Effluent Characteristics**

Comment: Requirement to report dissolved oxygen is listed twice.

**Part I. A. – Outfall S06**

Comment: Outfall S06 is listed on page 12 in a specific table and is also listed under Category I outfalls on page 15.

**Part I. A. - Outfall 125 - Effluent characteristics described as IC<sub>25</sub> in 5% effluent**

Comment: Table in Part I, page 8 shows IC<sub>25</sub> in 5% effluent and table in Part III, page 28 shows in 9% effluent.

**Part I. A. - Outfall S24 – Footnote in Effluent Table for Outfall S24**

Comment: The footnote indicates that data obtained at this outfall by CERCLA program monitoring is acceptable. We request adding wording “and at Bear Creek kilometer 9.2” after “at this outfall.” This monitoring station is located slightly downstream and is used for sampling under the CERCLA program.

*RESPONSE:*

**Agreed -these changes will be incorporated in the final permit. The IC<sub>25</sub> limit established in the permit is 9% - the footnote on the table on page 8 will be corrected from 5% to 9%.**

*DOE COMMENT:*

**Part I. B. 2 – Sampling Frequency**

Comment: This section states “If there is a discharge from a permitted outfall on any given day during the monitoring period, the permittee must sample and report the results of analyses accordingly . . . .” Very few outfalls at the Y-12 Complex have automatic sampling equipment in place. Request wording “the permittee must sample” be deleted or replaced with “the permittee must demonstrate that a reasonable effort has been made to sample.”

*RESPONSE:*

**The intent of this provision paragraph is to prevent facilities from conducting monitoring at an outfall on any dry day (maybe when the production is down), and reporting No Discharge, even though there may be a discharge on another day(s) during the month. Basically, all we're trying to say is: "if there is a discharge during any given month, you can't certify on the DMR that there was no discharge".**

**We propose to add the following wording to Part 1. B. 2:**

**“The permittee should mark the 'No Discharge' box on the Discharge Monitoring Report form only if a permitted outfall does not discharge at any time during the monitoring period. If the outfall discharges effluent at any time during the monitoring period, the permittee must provide at least one sampling result from the effluent of that outfall.”**

*DOE COMMENT:*

**Part II C. 6 Bypass “Bypass is the intentional diversion of wastewater away from any portion of a treatment facility.”**

Comment: This wording appears to take away operational flexibility and discretion. For instance, on occasion wastewaters are diverted from one treatment unit or treatment facility to another for alternate treatment. Suggest clarifying the definition of bypass by adding that “Bypass does not include diverting from one treatment unit or treatment facility to another for alternate treatment.” We also suggest wording such as, bypass is diversion of wastewater in an effort to protect and maintain the operational treatment

unit from flood damage or other acts of God that are beyond the control of the permittee and system design.

**RESPONSE:**

**Agreed –We will add the suggested clarification in the final permit.**

**DOE COMMENT:**

**Part III. E. Biomonitoring Requirements, Chronic**

Comment: This section indicates that if toxicity is demonstrated by the IC<sub>25</sub> tests specified to be performed on water from Outfalls 200, 135, and 125, a permit violation occurs. Toxicity, if present, particularly at Outfalls 200 and 135, is likely caused by legacy contamination in the area upstream of these locations. We do not agree that permit limits (or possible violations of the permit due to legacy contamination) should be placed on this permit. Instead, the gathering of information, evaluation of toxicity concerns upstream of these outfalls, and studies to determine if concerns are either from legacy or ongoing operations can be conducted during this three-year permit period without imposing limitations that would result in a permit violation. We believe that corrective action for legacy contamination in this area should be done, but should be accomplished under the CERCLA program rather than the NPDES permit.

**RESPONSE:**

**The WPC position is that toxicity is more likely tied to industrial stormwater runoff (from exterior operations and storage areas) containing metals, such as lead and cadmium, and to chlorinated once-through cooling waters. Hence, there is a need to initiate outfall testing for toxicity which was not included in the previous permit.**

**DOE data submitted during permit renewal discussions do not show concentrations of legacy contaminants (Hg and PCB's) which approach acute or chronic toxic levels. WPC believes toxicity testing is essential to addressing the causes of downstream impairment of the stream's biological integrity.**

**Requiring that exceedances of toxicity limits be considered a permit violation is also questioned. This provision is standard permit language for industrial discharges in TN. DOE's concern for permit violations due to legacy contaminants is noted; however, long-term data for mercury and PCB's do not indicate potential toxic conditions but reflect documented bioaccumulation problems.**

**This permit allows DOE to discharge to EFPC in a manner that protects water quality. Should the effluent become toxic to aquatic life, a violation of the permit has occurred and we would expect DOE to address this situation as described in the permit conditions.**

**DOE COMMENT:**

**Part III. G. Biological Monitoring and Abatement Program (BMAP)**

Comment: Seasonal updates summarizing field activities are to be submitted within 30 days of the completion of field work. Please be aware of the limitations of the seasonal reporting schedule. Currently, spring activities may not be completed before early summer and fall activities (i.e., bioaccumulation sampling) often extend into early winter. Perhaps the wording could be revised such that the sampling is defined as spring and fall in general (or spring-summer and fall-winter) but the

reports not labeled as to a specific season, since the timing of these reports is defined by the completion of seasonal fieldwork and not by the season per se. Another alternative is to produce spring and fall updates of sampling activities, but not tie the timing of the reports to the completion of field activities for that season. Thus a spring update might be provided in late spring which would inform the state of the status of field activities that have been completed by that date, and any additional field work completed after that date in late spring or summer could be deferred to the fall update.

*RESPONSE:*

**WPC agrees with DOE's views regarding the need for reporting before fieldwork is completed. We only need to know that the fieldwork has been undertaken and to learn of any unusual circumstances which are encountered. This brief letter report will keep us aware of the ongoing work and alert us to any potential difficulties which may be reflected in the spring and fall updates.**

**We agree with your suggestion to provide a brief spring and fall update as described in your comment.**

*DOE COMMENT:*

**Part III. H. Addition of Raw Water to East Fork Poplar Creek**

Comment: BWXT Y-12 personnel are conducting studies to determine if flows lower than 7 mgd may be applicable for the upper reach of East Fork Poplar Creek. We recommend addition of wording indicating that should information or studies during the life of this permit demonstrate to the satisfaction of TDEC personnel that a lower flow is more appropriate, consideration will be given to modifying this permit.

*RESPONSE:*

**Agreed -This change will be incorporated in the final permit.**

**COMMENTS ON PERMIT RATIONALE:**

*DOE COMMENT:*

Page R2, under USDOE-Oak Ridge Y-12 Complex Missions: Suggest adding the following bullet. Environmental Management Programs include activities to address legacy contamination, operation of wastewater treatment facilities, and waste disposal.

*RESPONSE:*

**Agreed -This change is acknowledged in this Addendum to the Rationale adding this mission.**

*DOE COMMENT:*

Page R25 (Outfall 501) states that if Outfall 200 exhibits toxic conditions, this intermediate monitoring point will be investigated as to its contribution. Similar language is used for the other wastewater treatment streams where toxicity testing is being discontinued. In each case, it would be best to verify with the state what triggers such a resumption of testing. We assume that it is the same as for the triggering of a Toxicity Identification Evaluation, which is toxicity being detected at the in-stream waste concentration over two consecutive tests. However, this wording is vague and could be interpreted as being triggered by the detection of toxicity (even once) at any concentration of effluent.

*RESPONSE:*

**Our intent is to ensure that follow-up work is completed should Outfall 200 exhibit toxicity. Your assumption is correct – it takes two consecutive test failures at Outfall 200 (or 3 failures in 12 months) to trigger TIE/TRE studies. Should that occur, we**

believe DOE would immediately evaluate all upstream discharges to the storm drain plus effluents from treatment systems (501, 502, 503, and 512) as part of the TIE effort.

*DOE COMMENT:*

Figure 3, page R33 shows C09 as an in-stream monitoring point. This location is not planned to be used for compliance monitoring under this permit.

*RESPONSE:*

**Agreed -This change is incorporated in this Addendum to the Rationale adding the revised Figure 3, which you have provided – and thanks – this figure really helps to show monitoring locations clearly.**

*DOE COMMENT:*

Page R52 indicates that an updated BMAP plan is to be submitted within 30 days of issuance of the permit. Page 30 states that the permittee shall submit a revised BMAP plan within 60 days of the effective date. The wording needs to be consistent between the two sections.

*RESPONSE:*

**Agreed –The permit wording will remain as stated. This change is acknowledged in this Addendum to the Rationale indicating the permit requirement is submission 60 days from the effective date.**

*DOE COMMENT:*

On page R52, the BMAP program is incorrectly described as having been in place since 1995. The program has been in place since 1985.

*RESPONSE:*

**Agreed -This revised date is incorporated in this Addendum to the Rationale.**

*DOE COMMENT:*

On Page R52 there is a statement that an annual report is to be submitted within one year of the effective date of the permit. Part III, page 30 of the permit, states that an annual report is to be submitted in July of each year. The wording needs to be consistent.

*RESPONSE:*

**Agreed –The permit wording will remain as stated. This change is incorporated in this Addendum to the Rationale indicating the permit requirement is submission in July of each year.**

*DOE COMMENT:*

pH limits for Outfall S18 and S26 should be set for a range of 4 to 10 rather than 6 to 9. The pH value of 10 is recommended due to anticipated algae blooms occurring in sediment ponds being converted from “dry” to “wet” under TDEC Div. Of Solid Waste Management requirements. The pH value of 4 is recommended due to acidic nature of rainfall which has a pH of 4.4.

*RESPONSE:*

**Effluent data for pH from 1997 – 2004 is added to Appendix 4 of the draft permit which shows the pH of these Category 1, 2, and 3 stormwater outfalls. These data indicate a range of 6.7 to 8.5 for S18 (Cat 1) and 6.9 to 8.2 for S26 (Cat 2). Although these data relate to dry ponds, our experience across the state is that effluent pH from these ponds is capable of meeting limits of pH from 6 to 9.**

Regarding the impact of acid rain effects on outfall pH values, reported stormwater data from multiple outfalls at Y-12 has not indicated values below 6. Accordingly, the proposed limits of 6-9 will be retained.

Subsequent discussions with TN DSWM have indicated the purpose of pond redesign is to address potential release of PCB and TSS from building debris. Accordingly, we will include PCB monitoring in the revised SWPPP for Outfall S18.

*DOE COMMENT:*

Outfall S22 should be deleted from the permit on page R22.

*RESPONSE:*

**Agreed – This change is incorporated in this Addendum to the Rationale.**

*DOE COMMENT:*

Reword requirements for toxicity testing of Outfalls 501, 502, and 512 to eliminate reference to test failures at Outfall 135 in relation to these outfalls [since Outfall 135 does not contain these effluents].

*RESPONSE:*

**Agreed – we have changed the wording to strike through the reference to Outfall 135.**

*DOE COMMENT:*

Reword requirements for “approval” of Radiological Monitoring Plan to reflect Plan should be submitted for “review and comment”.

*RESPONSE:*

**Agreed – we have changed the wording in the Permit page 30 to strike through the word “approval” and inserted “comment”.**

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**US Environmental Protection Agency Comments on Draft Permit,  
received October 20, 2005**

1. Recommendation: The cover page usually lists all outfalls and corresponding receiving waters, but this permit does not. It is recommended to include all outfalls and receiving waters (or internal monitoring points) associated with each outfall. This could be done as an attachment.

**Table of outfalls/receiving waters will be attached to the permit (see attached copy).**

2. Recommendation: It appears that page 1 of the permit is missing the list of outfalls and where each discharge; thus this may need correction.

**The same table discussed above will be added to the permit.**

3. Recommendation: On the limits pages (for all outfalls that it applies to), it is recommended to place the pH limits under the daily maximum column. The limit for pH is a minimum and maximum, not an average, thus it would be better reflected under the maximum column.

**We will change the limits table to indicate pH limits also apply under the daily maximum column.**

4. Recommendation: For all outfalls, it is recommended that one notes that it is a 24-hour composite, although it is noted later in the permit under the narrative definitions.

**A footnote is added to the limits tables to clarify the time interval over which the composite sample must be collected.**



5. Question: For outfall 501, how does one collect composite samples when it is states the frequency is "1/batch?"

**When the Batch is released, timed portions of a sample are collected to make up one composite.**

6. Question: For outfalls 501 and 502, what is a "monthly composite" - this does not make sense? **Measurement frequency and Sample Type are changed to reflect "monthly" and "composite", respectively.**

7. Question: For outfalls 135, 125, and 200, there are no limits or reporting listed under "Effluent Limits for Toxicity (WET)". What limit is required? Please change to make similar to other permits written by TN staff.

**Limits are shown on pg 28 as 5%, 9%, and 34% respectively.**

8. Recommendation: Outfalls 021 and 055, there is a box which states previous permit limits. This does not need to be shown. Likewise, the same applies to instances where the boxes exist which state New permit limits under the other outfalls.

**Labels for Permit Limits are changed to delete reference to previous limits.**

9. Question: Under Outfall EFP, it states that flow of 7.0 MGD must be maintained. If it is not, what is the facility suppose to do (not discharge)? Since the flow is augmented, the limits page should refer to item H. on page 30, for clarity.

**Agreed – footnote is added to the Outfall EFP Table in Sec I of the permit referring to Section III H. requirements for flow augmentation.**

**A paragraph is shown in the permit describing how flow data is to be reported – the same procedure is stated in the Rationale and needs to be included in the permit:**

10. Question: What type of wastewater comes from Outfall EFP, Station C11, S06, S19, S24, and all those outfalls listed on page 14 for categories I, II, and III. Should this be noted on limits page?

**Agreed – we have added a heading to each table with to show the type of wastewater: all these you have listed are Instream Monitoring Points except for Category I, II, and III, which are Industrial Stormwater.**

11. Question: What type of wastewater is Station C11 - should this be noted on the limits page?  
**C11 is an instream station - See Response 10 above.**

12. Concern: Page 16, under the discussion regarding Mercury, please note that there is a more sensitive method of analysis for mercury, Method 1631E (which gets down to ng/l), and if this method is needed to get to a lower detection level, it should be used.

**Concentrations of mercury found in the stream range from the Tennessee published RDL (0.0002 mg/l) to much higher levels which indicates that a more sensitive test method is not needed.**

13 & 14 – not used.

15. Recommendation: Be a little more specific to receiving water information in rationale, Part III, and Appendix A. Include all outfalls as a summary, including internal monitoring points, ground water, storm water, etc.

**Agreed – A table of outfalls/streams is added to the Permit.**

16. Recommendation: Denote what the following mean on Appendix 4 - (a) and (b) in the heading and d - which I was told means not applicable.

**Footnotes are added in the Permit Limits Tables as follows:**

**a = mg/l unless otherwise noted**

**b = lbs/day unless otherwise noted**

**d = not applicable**

**(note c = not used)**

17. Concern: For Outfall 502 and Rationale (page 27), since the Mercury water quality level is 0.051 ug/l, the testing method that should be used to monitor mercury should be Test Method 1631E in order to ensure the most appropriate test method is used. In the future (since EPA is developing additional test methods that are as sensitive) other sufficiently sensitive test methods may be used (once approved by EPA). If you want to place this test method at outfall 200, that would be allowed.

**See note 12 above.**

18. Concern: For Outfall 502, the rationale indicates that selenium is reported at 1.2 mg/l. The permit has reporting only. Will the water quality be protective for selenium and aquatic life and recreational uses? Please run the appropriate water quality scan and send it to EPA.

**Agreed – the scan is attached – and indicates the allowable selenium concentrations are 1.57 mg/l monthly average and 6.48 mg/l daily maximum.**

**Selenium appears to be a significant trace constituent associated with reduced bioavailability of mercury in East Fork Poplar Creek.**

19. Question: Are the heavy metals from Outfalls 501 and 502 that are discharged through Outfall 200 protective of water quality? Can you provide the appropriate water quality scan?

**Agreed – the scan is attached .**

20. Question: For Outfall 502, this is not listed under Appendix 3 of rationale – why not?

**Agreed – we showed in the rationale two 501's, but left out 502- limits are unchanged.**

21. Recommendation: (This may explain the previous question that was raised.) It appears that outfall 501 might be listed twice on Appendix 3, once on page 64 and once on page 65. This needs correction.

**Agreed – see above.**

22. Question: Where do Outfalls 51 and 55 discharge? The rationale, on page 10 is not clear.

**Both discharge to East Fork Poplar Creek – see Figure 1 on R-4.**

23. Question: Page 21 of rationale, Section C discusses Mercury (Hg) - Is Hg increasing? (This should be discussed). It is also recommended to include a discussion about how CERCLA is providing Mercury cleanup and why NPDES cannot place more stringent limits on Hg (because of CERCLA). If Hg is increasing, where is it coming from (from Hg removal and treatment, from current operations that are on-going at Y12, other)? Could you discuss how a future TMDL for Mercury will be done and give projected timeline and what potential a TMDL will have on any future NPDES permits and with CERCLA.

**For discussion of mercury concentrations, see Section XII, page R-56.**

**For discussion of CERCLA cleanup, see Section XII. A & B, pg R-57**

**Mercury limits are discussed in Sec. XII F which addresses the Consent Order from the appeal of the previous permit. In WPC's letter to DOE dtd Sept. 15, 2005, (which we have provided to EPA), we further indicated stricter mercury limits would not be imposed by this permit: "The basis for this language [in the Consent Order] was that if new treatment technology became available, more restrictive limits might be applicable. No evaluations have been made showing that new treatment technologies have**

become available. Thus the renewed permit applies the same mercury limits as found in the Consent Order.”

We also addressed the blending of legacy and operational discharges:

“DOE contends that permitted outfalls may contain a blend of contaminants from current operations with those from future legacy remediation and, thus, should not be regulated under the CWA. When a permittee discharges a blend of current operation wastestreams and legacy wastestream containing contaminants, the discharge will be regulated under the NPDES permit. To avoid this situation, segregation of wastestreams containing legacy contaminants would be preferred. Failing that, the Division of Water Pollution Control would expect DOE to ensure that increased discharge of these contaminants to NPDES outfalls during actual remediation would be prevented to the maximum extent practicable.”

**REGARDING A MERCURY TMDL:**

The 1998 303(d) list identified the receiving stream as impaired water due to elevated “metals” levels. The current 303(d) listing more specifically identifies the impairment as fish tissue mercury contamination, based on the FDA consumption guideline of 0.5 mg/kg total mercury. The State’s TMDL consent decree (based on the 1998 listing) requires development of a TMDL by 2011.

The development of a TMDL will require calculating an allowable load from all sources which attains the WQ standard protective of fish consumption. Presently, TN does not have a WQ standard which relates to fish tissue, but instead, uses the FDA consumption guideline for mercury of 0.5 mg/kg total mercury as the basis for posting streams for fish consumption advisories.

Without a fish tissue-based criterion and a methodology for translating the fish tissue criterion to an acceptable water column concentration, neither the TMDL nor a facility-specific wasteload allocation can be developed. Because of the uncertainties related to the water quality standard for mercury, the TMDL methodology, timeline, and potential impacts on NPDES permits or CERCLA actions cannot be determined at this time.

**Effluent limits for mercury at Outfalls 550, 551, and 55 are retained in the renewed permit pending development of the TMDL.**

24. Question: On Page 9 and 29 of rationale; will the newly constructed larger capacity system being built by CERCLA also be limited in the NPDES permit? If so, how?

**No limits are proposed, per the Consent Order.**

25. Recommendation: It is strongly recommended (under outfall 550, page R-29) to re-emphasize that new system being built is under CERCLA and note whether this, too, will be in the NPDES permit or not.

**Agreed – we have stated in Sec XII. F. that “no additional limits are proposed”. We further state in our Sept. 15, 2005 response to DOE comments that we request further data from DOE regarding “the number, locations, and characteristics of discharges from that project.”**

26. Recommendation: It is strongly recommended to note where outfall 551 (CMTS) discharges on page R-10 (similar to how the rest of the section is written. It is shown on page R-30.

**Agreed – Outfall 551 discharges to Outfall 200.**

27. Recommendation: For Outfall 200 (EFPC) on page R-10, please note in the narrative portion that this discharges to EFPC.

**Agreed.**

28. Question: Is there a discrepancy on page R-10 for outfall 200; this notes 57 identified upstream outfalls, yet page R-6 notes there are 53 outfalls?

**Yes, the total number of outfalls from Sec. I.A. of the permit is 58.**

29. Concern: There is a discrepancy for Outfall 200 WQ table between page R-31 and Appendix 5a - Column 8. Please let me know which ones are the correct WQ values. If the Appendix table is correct, then the limits for cadmium (daily maximum) and lead (monthly average and daily maximum) will need to be more stringent to match Appendix 5a - Column 8. This might also affect the limits for outfall 125 and 135.

**A revised Appendix 5a is attached and will be inserted into the final permit.**

**Monthly average and daily maximum Permit Limits are revised at Outfall 200 for lead (0.041 and 1.19 mg/l) and cadmium (0.001 and 0.024 mg/l).**

30. Question: For Outfall 200, it is noted that there is a mixing zone (MZ) for the combined effects of outfalls 200, 125, and 135. Was this in the previous permit? If not, EPA will need the mixing zone calculations. Has the MZ been verified through field study (i.e., dye or conductivity tests)?

**The calculations shown in the rationale under the discussion of Outfall 200 assume rapid and complete mixing. Permit limits will be measured for compliance at the end-of-pipe. These limits include effluent toxicity, metals such as cadmium and lead, and TRC.**

**The approach described in the rationale is modified via this Addendum because it would have allowed the use of the segment of EFPC between Outfall 200 and Station C11 as an "instream reactor" for the dechlorination process. This procedure would create potential for lethality of aquatic organisms due to toxic effects of chlorine and metals and potentially violate TN WQ Criteria.**

**Effluent limits at these three outfalls have been added with a compliance schedule – see response to comment 36 below.**

31. Question: For Outfall 200, page R-38, can a better rationale of how Oil & Grease limits were previously derived be included in the permit?

**The permit limits of 10 and 15 were retained from the two previous permits.**

32. Concern: For Outfall 200, page R-39, PCB; if the receiving water is impaired, why should there not be a water quality limit be developed and placed in the permit for PCB?

**Agreed – PCB limits are added to Outfalls 125, 135, and 200 in the permit.**

**Calculations are provided as follows:**

$$C_w = \frac{[C_m (Q_s + Q_w) - Q_s C_s]}{Q_w}$$

where:

**C<sub>w</sub> = concentration of PCB in 3 outfalls necessary to protect water quality**

**C<sub>m</sub> = resulting in-stream concentration after mixing = 0.00064 mg/l daily max.  
and monthly average**

**C<sub>s</sub> = stream background concentration (Clinch River water) = 0.0 mg/l**

**Q<sub>s</sub> = stream flow of Clinch River water added = 4.73 mgd**

Qw = wastewater flow = 2.3 + 0.23 + 0.45 = 2.98 mgd  
(This represents the combined flow of Outfall 200 and two other major Outfalls 135 (0.23 mgd) and 125 (0.45 mgd), which also discharge wastewater.)

Daily maximum concentration:

$$Cw = \frac{0.00064(4.73+2.98) - 4.73(0.0)}{2.98} = \frac{0.00064 \cdot 7.71}{2.98} = 0.0016 \text{ mg/l}$$

Use Cw = 0.002 mg/l in permit – added to limits table in Part I. A.

33. Question: Where does Station 201 discharge? Note that Pages R-11 and R-39 do not adequately describe.

**Outfall 201 is the former in-stream monitoring point in East Fork Poplar Creek below the three major outfalls. The permit relocates this monitoring point to Station C11 further downstream – see page R39.**

34. Comment: On page R-39, it is noted for Station 201, Cadmium and Lead, that compliance with instream lead and cadmium concentrations should be attained yet the permit has no limits. Please explain what is meant by this and whether limits are needed.

**Permit limits are established at Outfalls 200, 125, and 135 to protect the instream water quality measured at former Outfall 201 (now Station C11). No permit limits are presented for Station C11 because in-stream water quality criteria will apply.**

35. Recommendation: On page R-11, it is recommended to note where outfalls 135 and 125 discharge. Please note (similar to item noted above) that the lead and cadmium limits do not equate to those determined by Appendix 5a for both outfalls.

**These outfalls are shown on Figure 1 near Outfall 200. As noted above, we have revised Appendix 5a (attached).**

36. Concern: It is noted on page R-40 that Outfall 135 should have a TRC limit, yet the permit does not have a limit. The permit needs correction.

**Agreed – The permit will establish TRC limits of 0.044 daily maximum and 0.025 monthly average for Outfalls 200, 125, and 135. Since the renewed permit will impose this new water quality-based limit, a compliance schedule is established in Part I of the permit to grant the permittee a reasonable time to attain compliance:**

By six (6) months of the permit effective date

The permittee shall have completed an engineering report to identify the optimal means of reducing TRC discharges to within permit limits.

By eighteen (18) months of the permit effective date

The permittee shall have completed renovation or construction of the dechlorination system such that final operational testing can begin.

By two years of the permit effective date

The permittee shall demonstrate compliance with the permit limits shown in Part I.

**See further discussion of the mixing assessment from comment 30 above.**

37. Recommendation: On page R-40 for outfall 135, (under Metals) please make a reference to the table as found in Appendix 5a.

**Agreed.**

38. Recommendation: Appendix 5a, please note this is also for outfalls 125 and 135 (as we previously discussed) and therefore this should be corrected.

**Agreed.**

39. Concern: Page R-42, notes that there is an outfall 109 and limits are listed under page R-97, but this outfall does not appear in the actual permit. Please make this correction. Also, please note, that if this outfall has a continuous discharge, the TRC monthly average limit must also be included along with the daily maximum limit.

**Agreed – the permit for Outfall 109 will reflect a both a monthly average limit for TRC of 0.03 mg/l and a daily maximum limit of 0.05 in accordance with 40 CFR 122.45 (d).**

40. Concern: Page R-43 for Outfall 077 states that it will be covered under the BMP Plan. Where was this discharging? Was this an internal monitoring point, if so that should be stated. If it discharged directly to surface waters then the outfall needs to remain in the permit.

**Agreed – Outfall 077 will be shown in the permit with limits of pH and flow on a report-only basis during the discharge created by manual operation of the sump pump. See attached table of revised permit limits.**

41. Question: On page R-43 and R-44, it states that flow, pH, and TRC monitoring has been reduced to quarterly, but the actual permit does not reflect this; why not? There may be other outfalls and monitoring that have been reduced that are not reflected in the permit (this was not reviewed by EPA).

**Agreed – a revised Permit Limit table is attached to this Addendum.**

42. Recommendation: On page R-11, for the "Additional Significant Outfalls" list the receiving water or where each discharges.

**Agreed – All these outfalls discharge directly to EF Poplar Creek.**

43. Concern: On pages R 58-59, it may not be legally correct to use a Consent Order from the previous permit's appeal in order to re-establish the same mercury limits for outfalls 550 and 551. The rationale indicates that the Order states that for subsequent permits, that the mercury be reevaluated. Was this evaluation done, what was the outcome, and how was it derived. Don't just "carry it from the Order."

**The evaluations involved numerous meetings and discussions with DOE, as well as the review of data supplied with the application. We concluded that retaining the existing limits is appropriate. We refer you to the Sept. 15, 2005 responses to DOE on the draft permit, especially to their "Specific Comments – Part I. A. Contains limits for mercury at Outfalls 550, 551, and 055", in which we stated no new information has come to light which would allow us to impose a tighter, or even a looser effluent limit.**

**The Final Permit includes a discussion of Mercury Limits with more background related to the above discussion.**

44. Concern: On page R-59, Item H-Detection Limit, as stated previously, mercury can be reported to a more sensitive detection level by using Method 1631E and this Standard Method should be used as warranted. In cases where the permittee records a limit less than 0.0002, then the more sensitive method should be used.

**See comment/response 12 above.**

**US Environmental Protection Agency Review Letter on Draft Permit and Notice of Determination, received February 20, 2005**

1. Regarding EPA's question #31 as shown above regarding Oil and Grease limits, the Rationale is based on experience with effluent concentrations from properly operated oil-water separators. This approach has been approved by EPA for the TN General Permit for Hydrostatic Testing, Permit No. TNR100000, dated December 13, 2005. Effluent limits will remain at 10 mg/l monthly average and 15 mg/l daily maximum.
2. EPA states that the Y-12 Permit should account for implementation of the Sediment TMDL for the Lower Clinch River Watershed, provided the TMDL is approved prior to permit issuance. The Sediment TMDL is still awaiting approval and the Final Permit will be issued. Accordingly, the implementation of the Sediment TMDL should be addressed in a future permit.
3. EPA requests the opportunity for input into the Biological Monitoring and Abatement Program, with emphasis on fish and fish tissue monitoring. We will provide EPA with the Draft BMAP Plan once it is received following permit issuance. At EPA's request, we have added the following to the Section III. G. BMAP, first paragraph of the permit: "USEPA comments on the draft BMAP Plan will be utilized during discussions with DOE in reaching final plan approval."

**ATTACHMENTS:**

1. **Table of Outfall Locations and Receiving streams which is inserted at pg 1 of the Permit:**
2. **Revised Appendix 5a – Water Quality-Based Effluent Calculations – Outfall 200**
3. **Revised Appendix 5a – Water Quality-Based Effluent Calculations – Outfall 502**
4. **Revised Permit Limits – Outfalls 055, 021, 109, 077**

# OUTFALL LOCATIONS AND RECEIVING WATERS

OUTFALL LOCATIONS			CONVEYANCE	DISCHARGE
Outfall	Longitude	Latitude		RECEIVING WATERS
Wastewater Treatment Facilities				
501	35.9838	-84.2597	North-South Pipes	East Fork Poplar Creek
502	35.9764	-84.2755	North-South Pipes	East Fork Poplar Creek
503	35.9847	-84.2550	North-South Pipes	East Fork Poplar Creek
512	35.9847	-84.2553	North-South Pipes	East Fork Poplar Creek
520	35.9858	-84.2611	Outfall 135	East Fork Poplar Creek
550	35.9844	-84.2558		East Fork Poplar Creek
551	35.9956	-84.2397	North-South Pipes	East Fork Poplar Creek
51	35.9872	-84.2489		East Fork Poplar Creek
North/South Pipes and Related Outfalls				
125	35.9881	-84.2519		East Fork Poplar Creek
135	35.9858	-84.2525		East Fork Poplar Creek
200	35.9856	-84.2528	North-South Pipes	East Fork Poplar Creek
C11	35.9853	-84.2536	In-stream monitor	East Fork Poplar Creek
Minor Outfalls				
21	35.9881	-84.2467		East Fork Poplar Creek
77	35.9867	-84.2508		East Fork Poplar Creek
13	35.9897	-84.2422		East Fork Poplar Creek
31	35.9875	-84.2500		East Fork Poplar Creek
EFF	35.9872	-84.2492	Instream Station 17	East Fork Poplar Creek
55	35.9869	-84.2492		East Fork Poplar Creek
109	35.9869	-84.2492		East Fork Poplar Creek

## MONITORED STORMWATER OUTFALLS

OUTFALL LOCATIONS			CONVEYANCE	DISCHARGE
Outfall	Longitude	Latitude		RECEIVING WATERS
2	35.9956	-84.2397		East Fork Poplar Creek
3	35.9939	-84.2392		East Fork Poplar Creek
4	35.9922	-84.2381		East Fork Poplar Creek
6	35.9933	-84.2369		East Fork Poplar Creek
7	35.9917	-84.2397		East Fork Poplar Creek
14	35.9897	-84.2431		East Fork Poplar Creek
16	35.9892	-84.2431		East Fork Poplar Creek
19	35.9883	-84.2453		East Fork Poplar Creek
20	35.9886	-84.2458		East Fork Poplar Creek
33	35.9875	-84.2500		East Fork Poplar Creek
34	35.9878	-84.2475		East Fork Poplar Creek
41	35.9878	-84.2478		East Fork Poplar Creek
42	35.9875	-84.2478		East Fork Poplar Creek
44	35.9875	-84.2481		East Fork Poplar Creek
45	35.9872	-84.2483		East Fork Poplar Creek
46	35.9875	-84.2483		East Fork Poplar Creek
47	35.9875	-84.2483		East Fork Poplar Creek
48	35.9875	-84.2489		East Fork Poplar Creek
54	35.9872	-84.2492		East Fork Poplar Creek
57	35.9872	-84.2494		East Fork Poplar Creek
58	35.9869	-84.2386		East Fork Poplar Creek
62	35.9869	-84.2361		East Fork Poplar Creek
63	35.9867	-84.2500		East Fork Poplar Creek
64	35.9869	-84.2336		East Fork Poplar Creek
67	35.9867	-84.2506		East Fork Poplar Creek
71	35.9867	-84.2508		East Fork Poplar Creek
77	35.9861	-84.2514		East Fork Poplar Creek
83	35.9861	-84.2514		East Fork Poplar Creek
86	35.9839	-84.2597		East Fork Poplar Creek
87	35.9764	-84.2756		East Fork Poplar Creek
88	35.9822	-84.2628		East Fork Poplar Creek
99	35.9872	-84.2611		East Fork Poplar Creek
102	35.9872	-84.2492		East Fork Poplar Creek
110	35.9842	-84.2558		East Fork Poplar Creek
113	35.9964	-84.4231		East Fork Poplar Creek
114	35.9956	-84.2397		East Fork Poplar Creek
126	35.9858	-84.2522		East Fork Poplar Creek
134	35.9858	-84.2522		East Fork Poplar Creek
S06	35.9747	-84.2767		Bear Creek
S18	35.9797	-84.2311	unnamed tributary	Clinch River
S19	35.9789	-84.2372	unnamed trib. at Rogers Quarry	Clinch River
S24	35.9731	-84.2703		Bear Creek



REVISED

## APPENDIX 5a

## WATER QUALITY BASED EFFLUENT CALCULATIONS

**WATER QUALITY BASED EFFLUENT CALCULATIONS**  
**OUTFALL 200**

**FACILITY USDOE - Y-12 Plant**  
**PERMIT TN0002968**

Stream (7Q10)	Stream (30Q2)	Waste Flow	Ttl. Susp. Solids	Hardness (as CaCO <sub>3</sub> )	Stream Allocation
[MGD]	[MGD]	[MGD]	[mg/l]	[mg/l]	[%]
4.730	4.730	2.980	10	142	90

	1	2	3	4	5	6	7	8
	Stream Bckgmd.	Fish/Aqua. Life Water Quality Criteria		Effluent Fraction	Fish & Aquatic Life Water Quality Criteria (7Q10)			
	Conc.	Chronic	Acute	Dissolved	In-Stream Allowable		Calc. Effluent Concentration	
EFFLUENT CHARACTERISTIC	[ug/l]	[ug/l]	[ug/l]	[Fraction]	Chronic	Acute	Chronic	Acute
Cadmium *	1.00	0.31	2.83	0.25	1.24	11.21	1.47	24.68
Copper *	5.00	12.08	18.70	0.25	34.77	53.80	73.81	118.13
Lead *	4.00	3.68	34.40	0.18	20.00	513.32	40.86	1189.56
Nickel *	10.00	69.97	629.94	0.18	161.84	1457.12	362.56	3378.64
Silver *	1.00	NA	5.88	1.00	NA	5.88	N/A	12.25
Zinc *	5.90	159.01	157.72	0.29	552.14	547.66	1277.25	1266.82
Mercury, (T) **	0.20	0.91	1.69	1.00	0.91	1.69	1.83	3.65
Chromium (T) **	1.00	100.00	NA	1.00	100.00	N/A	231.42	N/A
Cyanide (T) **	0.00	5.20	22.00	1.00	5.20	22.00	12.11	51.22

9	10	11	12	13	14
Human Health Water Quality Criteria (30Q2)					
In-Stream Criteria			Calc. Effluent Concentration		
Organisms	Water/Organis	DWS	Organisms	Water/Organis	DWS
[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]
NA	NA	5.00	NA	NA	10.21
NA	N/A	NA	NA	NA	NA
NA	NA	5.00	NA	NA	5.93
4600	610	100	10896.92	1406.11	218.57
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
0.05	0.05	2.00	-0.17	-0.17	4.37
NA	NA	100.00	NA	NA	231.42
220000	700	200	512275	1629.96	465.70

\* Denotes metals for which Fish & Aquatic Life Criteria are expressed as a function of total hardness. The Fish & Aquatic Life criteria for this metal are in the dissolved form at laboratory conditions.

The in-stream allowable criteria and calculated effluent concentrations are in the total recoverable form.

Hardness of Clinch River water is based on "East Fork Poplar Creek Flow Management Evaluation, November, 1995".

\*\* The criteria for these parameters are in the total form.

Stream Background Concentrations are based on Clinch River Raw Water analyses from water plant intake, CRM 66.3.

NOTE: Water Quality criteria for stream use classifications other than Fish & Aquatic Life are based on the 30Q2 flow.

**WATER QUALITY BASED EFFLUENT CALCULATIONS**  
**OUTFALL 502**

**FACILITY USDOE - Y-12 Plant**  
**PERMIT TN0002968**

Stream (7Q10)	Stream (30Q2)	Waste Flow	Ttl. Susp. Solids	Hardness (as CaCO3)	Stream Allocation
(MGD)	(MGD)	(MGD)	(mg/l)	(mg/l)	(%)
4.730	4.730	0.015	10	142	100

EFFLUENT CHARACTERISTICS	1	2	3	4	5	6	7	8
	Stream Bckgrmd.	Fish/Aqua. Life WQ Criteria		Effluent Fraction	Fish & Aquatic Life WQ Criteria (7Q10)			
	Conc.	Chronic	Acute	Dissolved	In-Stream Allowable		Calc. Effl. Conc.	
	(ug/l)	(ug/l)	(ug/l)	(Fraction)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Cadmium *	1.00	0.31	0.283	0.25	1.24	11.21	80.48	3343.10
Copper *	5.00	12.08	18.70	0.35	34.77	53.80	9744.67	15972.46
Lead *	4.00	3.68	94.40	0.18	20.00	513.32	5240.36	166655.90
Nickel *	10.00	69.97	629.94	0.48	161.84	1457.12	49693.27	473516.16
Silver *	1.00	NA	5.88	1.00	NA	5.88	N/A	1597.67
Zinc *	5.90	159.01	157.72	0.29	552.14	547.66	178740.01	177274.17
Mercury, (T)	0.20	0.91	1.69	1.00	0.91	1.69	231.86	487.74
Chromium (T)	1.00	100.00	NA	1.00	100.00	N/A	32394.48	N/A
Cyanide (T)	0.00	5.20	22.00	1.00	5.20	22.00	1700.82	7197.90
Selenium (T)	0.20	5.00	20.00	1.00	5.00	20.00	1570.79	6478.90

9	10	11	12	13	14
Human Health Water Quality Criteria (30Q2)					
In-Stream Criteria			Calc. Effluent Concentration		
Organisms	Water/Organism	DWS	Organisms	Water/Organism	DWS
(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
NA	NA	5.00	NA	NA	1309.83
NA	N/A	NA	NA	NA	NA
NA	NA	5.00	NA	NA	331.21
4600	610	100	150189.66	196334.14	29458.82
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
0.05	0.05	2.00	-48.55	-48.88	589.17
NA	NA	100.00	NA	NA	32394.48
220000	700	200	71986617	229044.18	65440.73

\* Denotes metals for which Fish & Aquatic Life Criteria are expressed as a function of total hardness. The Fish & Aquatic Life criteria for this metal are in the dissolved form at laboratory conditions.

The in-stream allowable criteria and calculated effluent concentrations are in the total recoverable form.

Hardness of Clinch River water is based on "East Fork Poplar Creek Flow Management Evaluation, November, 1995".

\*\* The criteria for these parameters are in the total form.

Stream Background Concentrations are based on Clinch River Raw Water analyses from water plant intake, CRM 66.3.

NOTE: Water Quality criteria for stream use classifications other than Fish & Aquatic Life are based on the 30Q2 flow.

# PERMIT LIMITS

## PROCESS WASTEWATER

### OUTFALL 055 COOLING WATER, SUMP WATER, STORMWATER

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY		MSRMNT. FRQNCY.	SAMPLE TYPE
	AVG CONC (mg/l)	AVG LIMIT (lb/day)	CONC (mg/l)	LIMIT (lb/day)		
Flow*	report		report		monthly	estimate
pH	range 6.0-9.0				monthly	grab
Mercury, total			0.004		weekly	grab
Total Residual Chlorine			0.5		annually	grab

\* Includes reporting of each bypass of EEMTS

### OUTFALL 109 COOLING WATER, STORMWATER

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY		MSRMNT. FRQNCY.	SAMPLE TYPE
	AVG CONC (mg/l)	AVG LIMIT (lb/day)	CONC (mg/l)	LIMIT (lb/day)		
Flow			report		quarterly	estimate
pH	range 6.0-9.0				quarterly	grab
Total Residual Chlorine	0.030		0.05		quarterly	grab

### OUTFALL 021 COOLING WATER, CONDENSATE, STORMWATER

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY		MSRMNT. FRQNCY.	SAMPLE TYPE
	AVG CONC (mg/l)	AVG LIMIT (lb/day)	CONC (mg/l)	LIMIT (lb/day)		
Flow			report		quarterly	estimate
pH	range 6.0-9.0				quarterly	grab
Total Residual Chlorine	0.188		0.188		quarterly	grab

The acceptable methods for detection and reporting of total residual chlorine are referenced in Part I, Section B. Monitoring Procedures, subsection 3. Test Procedures.

# PERMIT LIMITS

## PROCESS WASTE, COOLING WATER & STORMWATER

### OUTFALL 077

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY		MSRMNT. FRQNCY.*	SAMPLE TYPE
	AVG CONC (mg/l)	AVG LIMIT (lb/day)	CONC (mg/l)	LIMIT (lb/day)		
Flow	report	NA	report	NA	monthly	estimate
pH	range 6.0-9.0				monthly	grab

\* Samples to be collected during discharge upon manual operation of sump pump.

# PERMIT LIMITS

## PROCESS WASTEWATER

### OUTFALL 055 COOLING WATER, SUMP WATER, STORMWATER

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY		MSRMNT. FRQNCY.	SAMPLE TYPE
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	CONC. (mg/l)	AMT. (lb/day)		
Flow *	report		report		monthly	estimate
pH	range 6.0-9.0				monthly	grab
Mercury, total			0.004		weekly	grab
Total Residual Chlorine			0.5		annually	grab

\* Includes reporting of each bypass of EEMTS

### OUTFALL 109 COOLING WATER, STORMWATER

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY		MSRMNT. FRQNCY.	SAMPLE TYPE
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	CONC. (mg/l)	AMT. (lb/day)		
Flow			report		quarterly	estimate
pH	range 6.0-9.0				quarterly	grab
Total Residual Chlorine	0.030		0.05		quarterly	grab

### OUTFALL 021 COOLING WATER, CONDENSATE, STORMWATER

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY		MSRMNT. FRQNCY.	SAMPLE TYPE
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	CONC. (mg/l)	AMT. (lb/day)		
Flow			report		quarterly	estimate
pH	range 6.0-9.0				quarterly	grab
Total Residual Chlorine	0.188		0.188		quarterly	grab

The acceptable methods for detection and reporting of total residual chlorine are referenced in Part I, Section B. Monitoring Procedures, subsection 3. Test Procedures.

# PERMIT LIMITS

## PROCESS WASTE, COOLING WATER & STORMWATER

### OUTFALL 077

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY		MSRMNT. FRQNCY.*	SAMPLE TYPE
	AVG. CONC. (mg/l)	AVG. AMT. (lb/day)	CONC. (mg/l)	AMT. (lb/day)		
Flow	report	NA	report	NA	monthly	estimate
pH	range 6.0-9.0				monthly	grab

\* Samples to be collected during discharge upon manual operation of sump pump.

**Final Determination:**

**DETERMINATION**

***It is the determination of the division that NPDES Permit No. TN0002968 be re-issued to USDOE Y-12 National Security Complex.***



Edward M. Polk, Jr., P.E.

Manager, Permit Section

TN Division of Water Pollution Control

3/13/06

Date